HOUSE EAR INSTITUTE

RM 8658

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1995

Federal Communications Commission
1919 M St., N.W., #814
Washington, D.C. 20554

Dear Sir/Madam:

I am concerned about the potential impact on hearing aid users of GSM technology in future digital wireless telephones. I read Bill Machrone's column today in PC Magazine (July, 1995, p. 83) which indicated a significant problem with interference in Europe. I work with patients who use two types of implanted hearing aids, one type which is placed directly on auditory centers in the brain (auditory brainstem implant, ABI). Please carefully consider and review the possibly dangerous effects of this technology on our handicapped citizens. I would be happy to discuss this with you further.

Sincerely yours,

Steve Otto
Auditory Implant Research

cc: Robert Shannon, Ph.D., House Ear Institute
Lillian Yin, Ph.D., U.S. Food and Drug Administration

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Bill Machrone

Portable Telephones for Everyone

America's telecommunications industry is teetering on the brink. The FCC has auctioned off billions of dollars' worth of radio spectrum for the industry to offer new wireless services, called PCS (personal communications services). The winners must now choose the technologies they will use and begin to build the infrastructure of transmitters, switches, and consumer devices. Whatever technology they choose, the system will be digital, with significantly better capacity, compatibility, and privacy.

Europe has had such a system in place for several years. The European standard, GSM, is technologically advanced but for one small problem: It can't be used by hearing-aid wearers. In fact, if hearing-aid wearers come within several feet of a GSM phone, they hear a loud buzzing. If they get closer, the buzz becomes deafening, drowning out even the sound of their own voices.

The problem is well known in Europe. With billions of dollars' worth of infrastructure in place, however, it's too late to change the technology. Modifying the hearing aids isn't a viable solution, either. With the emphasis on small size, light weight, and long battery life, there's virtually no hope for improving the installed base. Even with new hearing aids, the problem cannot be eliminated.

Tragically, hearing aids didn't have to be a problem. GSM is based on a time-division multiple access (TDMA) scheme that causes the cellular phone to send out a pulse of radio-frequency energy 217 times per second. That's what the hearing-aid wearers hear. If the system had been built with another technology, such as CDMA (a lower-power, spread-spectrum technology), or at nonaudible frequencies, the interference would have been greatly reduced.

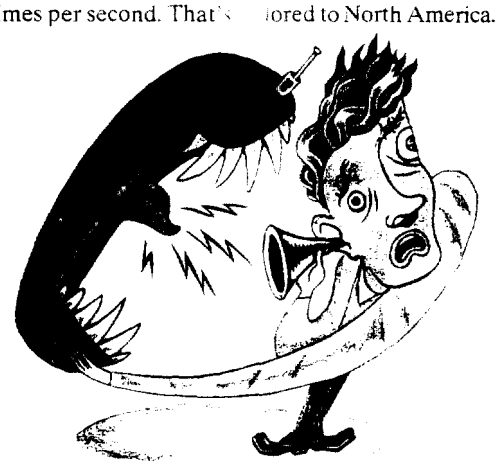
The chairman of GSM MoU, the oversight group for GSM vendors, has written to FCC chairman Reed Hundt to address the concerns: "Some of the research suggests that a small percentage of all hearing-impaired persons use old, inferior-quality hearing aids, and therefore may be unable to use high-power digital wireless telephones, whether they be CDMA, GSM, or AMPs-D." The letter suggests that existing hearing aids can be upgraded or replaced but doesn't address the attendant cost issues.

Given what we know about the potential effect of GSM on more than 6 million U.S. hearing-aid wearers, it's unconscionable to pursue this option. Yet BellSouth and Pacific Bell have decided to deploy GSM.

GSM has other problems, too. The power level, combined with the fast rise time of pulses, reportedly causes problems with electronic devices. Sweden bans the phones from its hospitals because they reportedly interfere with pacemakers and electric wheelchairs. A report from an Australian newspaper claims that a GSM car phone set off the car's airbag. One potential plus: GSM phones are said to be able to reset a Parisian taxi meter to zero.

GSM may be a poor choice for mobile computing. I wonder about the potential for confusing the sensitive innards of notebooks or interfering with emergency communications equipment.

American telephone companies are not without alternatives to GSM. NA-TDMA runs at lower power and is tailored to North America. CDMA has been slow in emerging from the lab but should be far better for the mixed voice and data services critical to mobile executives.



PCS telephones will be terrific—as long as you're not hearing-impaired.

These technology decisions are irrevocable once the building begins. Cellular phones have always been incompatible with hearing aids: let's not do the deaf another disservice. If you're not concerned about the plight of the hearing-impaired, look at your own situation with enlightened self-interest. If you believe that GSM is not the right choice, let the FCC know (Federal Communications Commission, 1919 M St. NW, #814, Washington, DC 20554).□

Illustration by Carolyn Fisher